

REMARKS/ARGUMENTS

Reconsideration of this application is requested. Claims 6 and 7 are active in the application subsequent to entry of this amendment.

The claims have been amended in order to more particularly point out and distinctly claim that which applicants regard as their invention and focus on preferred aspects of the disclosure. In particular, claims 1, 3, and 5 have been combined and now appear as new claim 6; claim 4 has been cancelled while claim 2 is now new claim 7.

The method of amended claim 6 is novel with respect to U.S. 4,855,255 because it involves use of an oxide-coated mechanical shadow mask, rather than use of temperature gradients, as shown in U.S. 4,855,255.

The method of amended claim 6 is novel with respect to IEEE JSTQE 3 pp 1308-1318, because no method discussed therein employs chemical beam epitaxy (CBE) together with an oxide-coated mechanical shadow mask. Instead, uncoated mechanical shadow-masks are suggested for use with MOVPE or MBE.

Applicants' claims are directed to non-obvious, patentable methods.

U.S. 4,855,255 may be regarded as the closest prior art because it discloses a method of growing a tapered waveguiding layer using CBE. The method of amended claim 6 differs from that of U.S. 4,855,255 in that an oxide-coated mechanical shadow-mask is used to obtain tapering, rather than use of temperature gradients across a surface on which a tapered layer is to be grown.

The use of an oxide-coated shadow-mask (instead of the use of temperature gradients) provides all the advantages of shadow-masking mentioned on page 10 of applicants' specification together with the advantage that the mask may be re-used, as there is no polycrystalline growth on it during CBE. The mask may therefore be re-used in different epitaxial growth runs without the need for cleaning.

Thus the technical problem solved by the method of claim 6 with respect to U.S. 4,855,255 is the provision of the advantages associated with shadow-masking in general, together with prevention of polycrystalline growth on the mask during CBE.

The technical problem is not solved by combining the teachings of U.S. 4,855,255 and in IEEE JSTQE 3 pp 1308-1318 as oxide-coated shadow-masks are not disclosed in IEEE JSTQE 3 pp 1308-1318. Therefore the method of amended claim is inventive with respect to these two prior art documents.

Furthermore, the use of an oxide-coated shadow mask overcomes a technical prejudice in the art. CBE is an epitaxial growth method which employs high growth temperatures and is extremely sensitive to oxygen contamination, even at a level of a few parts per billion. At the priority date of the present application, the skilled person would have not attempted to employ the method of the amended claim 6, due to the perceived risk of oxygen/oxide contamination. Such contamination would lead to substantial optical losses in the resulting waveguide, which is very undesirable, particularly in telecoms applications. However, the inventors have shown that use of an oxide-coated mask is not detrimental to the quality of the finished tapered waveguide.

There is nothing in any of the cited references to suggest the desirability of the combination or modification in the manner indicated by the Examiner. Specifically, there is no motivation or suggestion to combine U.S. 4,885,255 with the IEEE citation.

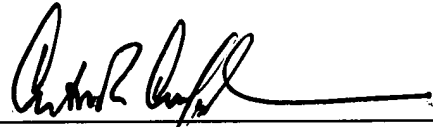
Thus, the mere fact that references can be combined or modified (and Applicants believe they cannot be) does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 16 U.S.P.Q.2d 1430 (Fed. Cir. 1990); MPEP § 2143.01. Hence, the Examiner's attempt to combine the cited references alone without any suggestion in the references of the desirability of the modification is improper and should be withdrawn.

Having fully responded to all of the pending rejections contained in the Official Action, applicants submit that their claims are in condition for allowance and earnestly solicit a notice to that effect. The examiner is invited to contact the undersigned if any further information is required.

Respectfully submitted,

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